

Claims

1. Module filter (1) comprising a container (2), comprised of at least one container housing (3) and a container bottom (4) and comprising at least one admission for a non-filtrate (6) and a discharge for the filtrate (7), comprising at least one filter module (8), comprised of several stacked, disc-shaped filter cells (9) substantially comprised of filter material (40) and having a central opening (10), respectively, and thus forming at least one central channel (28), which is, in turn, in fluid communication with the inner space (24) of each filter cell (9), and comprising support bodies between the filter cells (9), characterized in that the central channel (28) is connected to an admission (6') for the non-filtrate and connected with the inner space (24) of the filter cells (9) and in that a space (3') surrounding the filter cells (9) is formed within the container housing (3) which is connected with the discharge (7') for the filtrate, and in that the support bodies are formed as drainage support bodies (17) which extend at least approximately over the entire surface area of the filter cells (9), wherein in the drainage support body (17) a plurality of drainage channels (35) are provided which extend toward the outer rim of the filter cells or the drainage support bodies.
2. Module filter according to claim 1, characterized in that the drainage support bodies (17) are formed as a circular disc, wherein these projections (31, 32) project in the axial direction from the disc and extend in the radial direction, wherein the intermediate spaces between the projections (31, 32) are formed as drainage channels (35) and serve for removing the filtrate.
3. Module filter according to claim 1,

characterized in that the filter cells (9) and drainage support bodies (17) have a descending slope from the central channel (28) radially outwardly.

4. Module filter according to one of the claims 1 to 3, characterized in that the drainage support bodies (17) and filter cells (9) are formed as circular disks and have at least substantially the same diameter.
5. Module filter according to claim 4, characterized in that the drainage channels (35) extend as radial beams to the peripheral rim of the drainage support body (17).
6. Module filter according to one of the claims 1 to 5, characterized in that, on the side of each filter cell (9) facing the central channel (28), the filter material (40) of each filter cell (9) is spaced apart by means of a support element (41), wherein the support element (41) is a support ring, which by means of a penetration (44) arranged therein provides a fluid communication from the central channel (28) to the inner space (24) of the filter cells (9).
7. Module filter according to one of the claims 1 to 6, characterized in that the inner diameter (D) of the support ring (41) corresponds approximately to the diameter of the central opening (10).
8. Module filter according to claim 6 or 7, characterized in that the support ring (41) is comprised of a flat annular base body (42), wherein the base body (42) has spaced apart axial projections (43) which extend radially strip-shaped on both sides of the base body (42).

9. Module filter according to one of the claims 1 to 8,
characterized in that each filter cell (9) is formed by an upper layer (9.1) and
a lower layer (9.2) of the filter material (40) and the radially outer rims (51)
of the upper and lower layers (9.1, 9.2) are connected by a frame (29) to one
another wherein preferably the filter material (40) is a nonwoven filter cloth.
10. Module filter according to claim 9,
characterized in that the frame (29) at its underside has support knobs (30)
and the frames (29) are supported on one another therewith.
11. Module filter according to one of the claims 1 to 10,
characterized in that the filter module (8) is comprised of several alternatingly
stacked filter cells (9) and drainage support bodies (17) and in that a closure
ring (11) is provided axially at the ends of the filter module (8), respectively,
and coaxially to the central opening (10).
12. Module filter according to claim 10,
characterized in that the filter cells (9) and drainage support bodies (17)
forming the filter module (8) are held together by an element (23) arranged
at the side facing the central channel (28) and receiving the tensile forces.
13. Module filter according to claim 12,
characterized in that the element (23) is a sleeve (23) comprised of metal,
which has at its mantle surface a plurality of openings (39), and in that the
sleeve (23) is connected with its end faces positive-lockingly with the closure
rings (11).
14. Module filter according to claim 13,

characterized in that in the closure ring (11) a recess in the form of an annular ring (26) is provided for receiving a sealing ring (19).

15. Module filter according to claim 1,
characterized in that in the central channel (28) a central rod (33) as a tie rod is provided and is supported by means of a fastening arrangement (15) on the container bottom (4) of the module filter (1) and in that the drainage cover plate (34) is arranged at the upper end of the central pipe (33).
16. Module filter according to one of the claims 1 to 14,
characterized in that the filter modules (8) are aligned with their central openings (10) axially above one another and are secured by means of a drainage cover plate (34) in the container (2).
17. Module filter according to claim 15 or 16,
characterized in that the drainage cover plate (34) is supported by a support cap (12) with support ribs (13) on the container cover (36).
18. Module filter according to claim 15 or 16,
characterized in that a press plate (14) provided with an axial tie rod is provided as a drainage cover plate (34).
19. Module filter according to one of the claims 1 to 18,
characterized in that between the container bottom (4) and the lowermost filter module (8) a drainage bottom plate (46) is arranged which has a recess (47) in an area neighboring the discharge (7').
20. Module filter according to claim 15 or 16,

characterized in that the drainage cover plate (34) secures the filter modules between the drainage bottom plate (46) either by means of a pressing device (49), which is supported external to the container (2) on the container cover (36), or by means of a pressing device (49), which is supported within the container (2) on the container bottom (4) by means of a central rod (33) and a fastening arrangement (15).

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